

## CLAIMS

1. Method for measuring a measurement object (3) having at least one reference structure (9) for defining an object-fixed object coordinate system (6), with the aid of a measuring system (1) comprising at least one sensor system (2) for recording a contour (4) of the measurement object in a measurement coordinate system (5), characterized by the following steps:
  - positioning the measurement object in a measurement position in the coverage range of the sensor system,
  - establishing the position of the object coordinate system by means of the reference structure,
  - linking the object coordinate system with the measurement coordinate system,
  - rotating the sensor system about a rotation axis (7) relative to the measurement object for determining contour data,
  - processing the contour data, whilst taking account of the position of the object coordinate system in an evaluation unit.
2. Method according to claim 1, characterized in that, during the measurement, the measurement object is so fixed by a centring device (40) that accessibility to the reference structure is not impeded.
3. Method according to claim 2, characterized in that the measurement object is fixed in the measurement position in such a way that the reference structure is accessible for establishing the measurement object position, the measurement object being substantially rotation-like with respect to a measurement object axis, the reference structure is positioned within the outer contour of the measurement object in the vicinity of the

measurement object axis and a centring device for centring the measurement object acts on the outer contour of the measurement object.

4. Method according to claim 2, characterized in that a reference device (13) for establishing the position of the object coordinate system scans the substantially freely accessible reference structure.
5. Method according to claim 4, characterized in that the reference device (13) scans in noncontacting manner the substantially freely accessible reference structure.
6. Method according to claim 1, characterized in that a reference device performs a mechanical orientation of the measurement object by means of the reference system for establishing the position of the object coordinate system and in particular the reference structure is measured.
7. Method according to one of the preceding claims, characterized in that a shape and/or position variation of at least one measurement object surface portion (11) provided for engagement on an object surface, oriented substantially orthogonally to a rotation axis of the sensor system and formed on the measurement object is determined by means of the sensor system and/or reference device.
8. Method according to one of the preceding claims, characterized in that a marking is made on the measurement object more particularly defining a characteristic measurement point by a marking device connected to the sensor system.
9. Method according to one of the preceding claims, characterized in that the measurement object is conveyed substantially linearly between an insertion opening and a discharge opening of the measurement system, preferably perpendicular to the sensor system rotation axis.

10. Method according to one of the preceding claims, characterized in that measurement data of the sensor system are linked with measurement data of the reference device for determining wall thicknesses.
11. Device for measuring a measurement object having at least one reference structure for defining an object-fixed object coordinate system having a measuring system with at least one sensor system for recording a contour of the measurement object in a measurement coordinate system and a reference device for establishing the position of the object coordinate system with the aid of the reference structure, the sensor system being mounted in rotary manner relative to the measurement object.
12. Device according to claim 11, characterized in that there is a centring device for a positioning and/or fixing of the measurement object in the measurement position before and/or during measurement.
13. Device according to claim 11 or 12, characterized in that the reference device is set up for a noncontacting reference structure scanning.
14. Device according to claim 11, characterized in that the reference device is constructed for mechanically centring the measurement object with the aid of the reference structure.
15. Device according to one of the claims 11 to 14, characterized in that the sensor system and/or reference device is provided for determining the flatness and/or orientation of a measurement object surface portion provided on the measurement object, oriented substantially orthogonally to a rotation axis of the sensor system and constructed for engagement on an object surface.

16. Device according to one of the claims 11 to 15, characterized in that a marking device for making a marking on the measurement object is provided on the sensor system and/or reference device.

17. Device according to one of the claims 11 to 16, characterized in that the reference device is arranged in rotary manner substantially coaxially to a rotation axis of the sensor system.

18. Device according to one of the claims 11 to 17, characterized in that integration takes place into a conveying device (14), particularly a linear conveying system.

19. Device according to one of the claims 11 to 18, characterized in that there are size determination means for a basic positioning of the sensor system and/or reference device.